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Agricultural Memorandum No. 311

Quality of Bullion Hops - 1969

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A farm survey on Bullion hops carried out by the HMB and Wye College in 1969 included the taking of maximum and minimum temperatures on the fringe of 8 hop gardens using 'cocoa-tin' screens. These screens over-read maxima and under-read minima in comparison to a Stevenson screen but are acceptably comparable within themselves.

The minimum thermometers gave trouble at two sites; at site D there were consistent bubbles in the alcohol, and at site G there was consistent over-reading. The minima at D were adjusted by subtracting an estimated 0.5°C and those at G rejected but replaced by those at the most similar site (J).

Previous work indicated that there was an optimum mean temperature for ∝-acid between time of burr appearance and picking of about 16.5°C. Temperatures in 1969 exceeded this optimum, so that in theory the better ∝-acid should have been found at the cooler sites.

A reasonable linearity was found at 6 sites, the exceptions being B and J.

Results

Site	Date of Burr	Date of Picking	Mean Temp	∝-acid	Hop Yield
D	17 July	12 Sept	16.75	8.9	17.4
C	16 July	11 Sept	16.95	8.1	19.4
G	17 July	17 Sept	17.37	7.0	20.2
B	13 July	12 Sept	17.93	6.9	24.5
H	22 July	20 Sept	17.41	6.3	19.9
I	17 July	19 Sept	17.64	6.3	18.7
A	16 July	4 Sept	17.37	6.2	18.4
J	20 July	15 Sept	17.55	4.5	16.3

With reference to temperature the ∝-acid at B is high, that at J is very low.

It may be significant that the yield at B was the highest of the samples, and that at J the lowest.

It is also noted that B was picked (as was D, the best quality) on the two warmest days of September (12th and 13th). On the other hand J was picked in weather some 8°C colder.

The average day maximum temperatures at East Malling on the first day of picking the hops were as follows.

D	(8.9%)	26.1°C	H	(6.3%)	20.9°C
C	(8.1%)	23.9°C	I	(6.3%)	20.9°C
G	(7.0%)	20.8°C	A	(6.2%)	20.0°C
B	(6.9%)	26.1°C	J	(4.5%)	18.0°C

/A

A formula could be devised using

M = mean average day temperature, burr-picking
P = mean maximum day temperature, first two picking days
34.9 - 2M + 0.3P with results.

Site	M	P	Estimate	Actual	
A	17.37	20.0	6.2	6.2	
B	17.93	26.1	6.9	6.9	
C	16.95	23.9	8.1	8.2	
D	16.75	26.1	9.2	8.9	
G	17.39	20.8	6.4	7.0	(estimated minimum)
H	17.41	20.9	6.3	6.3	
I	17.64	20.9	5.9	6.3	
J	17.55	18.0	5.2	4.5	

whether or not the warmth of the day of picking has an effect on α-acid could, one presumes, be tested experimentally. Even so the influence of mean temperature in the last 60 days to picking seems to be confirmed.

Any comments or suggestions on this memorandum should be referred to the author.

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